

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

TRICONEX

8111

EXPANSION CHASSIS

Used with the applicable Triconex safety system configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Tricon Technical Product Guide

Standard Tricon System Products

Description	Model No.	See
Chassis Assemblies		
Main Chassis, High-Density Configuration, includes the Tricon printed manuals	8110	page 13, page 29
Expansion Chassis, High-Density Configuration	8111	page 13, page 29
Expansion Chassis, Enhanced Low-Density Configuration	8121	page 13, page 29
Remote Expansion Chassis, High-Density Configuration	8112	page 13, page 29
I/O Bus Expansion Cables (Set of 3)	9000 ^a	page 12
I/O-COMM Bus Expansion Cables (Set of 3)	9001	page 12, page 29
Blank I/O Slot Panel	8105	page 30
Power Modules		
120 VAC/VDC – 175-Watt Power Module	8310	page 32
24 VDC – 175-Watt Power Module	8311	page 32
230 VAC – 175-Watt Power Module	8312	page 32
Main Processor Modules		
3008 Main Processor, 16 megabytes DRAM	3008	page 33
Communication Hardware and Software		
Tricon Communication Module (TCM), Ethernet (802.3) and serial (RS-232/RS-485) ports	4351A, 4352A, 4351B, 4352B 4353, 4354	page 34
Enhanced Intelligent Communication Module (EICM), serial (RS-232/RS-422/RS-485) ports	4119, 4119A	page 35
Safety Manager Module (SMM), Honeywell UCN Interface	4409	page 36
Network Communication Module (NCM), Ethernet (802.3) ports	4329, 4329G	page 37
Advanced Communication Module (ACM), Foxboro I/A Series Nodebus Interface	4609	page 38
Hiway Interface Module (HIM), Honeywell Data Hiway Interface	4509	page 39
Triconex DDE Server Software	Contact Invensys	page 69
Network Accessory Kit (Ethernet thin cable, connectors and terminators)	7600-3	n/a
Remote Extender Modules		
Primary RXM, Multi-Mode Fiber Optics, Set of 3 Modules	4200-3	page 40
Remote RXM, Multi-Mode Fiber Optics, Set of 3 Modules	4201-3	page 40
Primary SRXM, Single-Mode Fiber Optics, Set of 3 Modules	4210-3	page 40
Remote SRXM, Single-Mode Fiber Optics, Set of 3 Modules	4211-3	page 40
Interface Modules		
HART Analog Input Interface Module with 2071H HART Multiplexer	2770H	page 54
HART Analog Input Interface Module with 2071H HART Multiplexer and Amp-Elco Adapter Cable	2750-2H	page 54
HART Analog Output Interface Module with 2071H HART Multiplexer	2870H	page 54
HART Multiplexer	2071H	page 54
TriStation 1131 and Diagnostic Software		
TriStation 1131 v4.x Software License with printed manuals	Contact Invensys	page 71
Enhanced Diagnostic Monitor v2.x	Contact Invensys	page 72

Chassis Options

A Tricon system is made up of one or more chassis assemblies which contain I/O and communication modules. The first chassis of a system is called the Main Chassis (Model 8110). To enlarge a system, Expansion Chassis (Model 8111 or 8121) and/or RXM Chassis (Model 8112) can be added. (See “System Configuration” on page 11 for details.)

I/O Expansion Bus

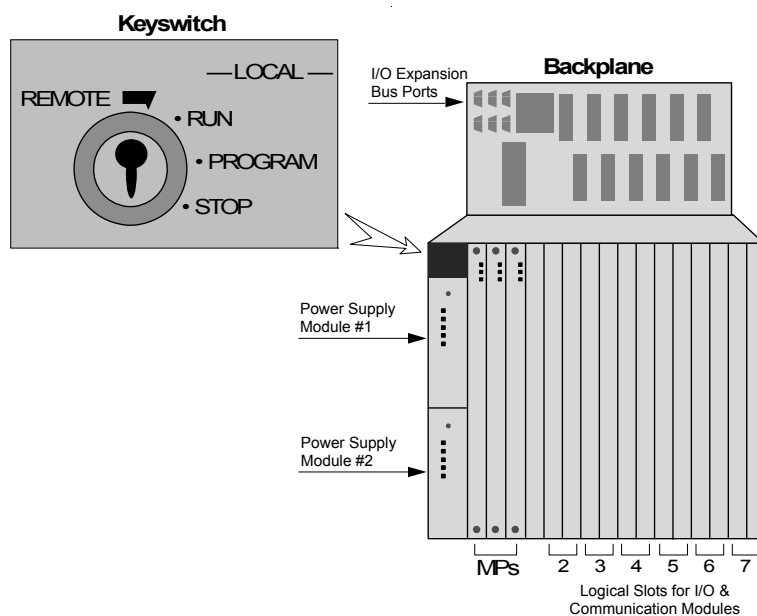
Each chassis has six RS-485 I/O expansion bus ports at the top left corner of the backplane. There are two sets of ports for channels A, B, and C, providing for two triplicated serial communications paths between chassis. One set of cables is required for each Expansion Chassis and for the RXM Chassis which houses the primary RXM Module set. The standard length of a cable set (Model 9000) is 6 feet—longer cables are available if needed.

The triplicated I/O bus transfers data between the I/O modules and the Main Processors at 375 kilobits per second. The communication bus runs between the Main Processors and the communication modules at 2 megabits per second.

Mechanical Specifications

These specifications apply to Main, Expansion, and RXM Chassis; Power Supply Modules; and other modules where indicated.

Overall Dimensions	19 in wide by 22.75 in high by 17.75 in deep (48.3 cm by 57.8 cm by 45.1 cm)
Chassis Fabrication	Black zinc-plated and welded cold-rolled steel
Approximate Weights	
Main or Expansion Chassis	54.0 lbs. (24.5 kg.)
Power Module	7.2 lbs. (3.3 kg.)
Main Processor	4.7 lbs. (2.1 kg.)
I/O Module	4.7 to 6.0 lbs. (2.1 kg. to 2.7 kg.)
HART Interface Module	4.8 lbs. (2.2 kg.)
Communication Module	5.0 lbs. (2.3 kg.)
16-point Termination Panel	.09 lbs. (.04 kg.)
32-point Termination Panel	2.1 lbs. (.95 kg.)



Keyswitch for System Control

The Main Chassis has a four-position keyswitch which controls all the chassis in the system. The keyswitch setting is readable by Tricon controllers, TriStation 1131 software, and the control programs. Switch settings are:

RUN—Normal operation with read-only capability. The Main Processors execute the previously-loaded control

program. Attempts to modify program variables by a TriStation 1131 application, Modbus masters, or external hosts are rejected. However, a control program may call gated access functions to enable external host writes during a designated window of time.

PROGRAM—For program loading and checkout. Allows control of the Tricon system from the TriStation 1131 platform, including Download All and Download Changes. Also allows writes to program variables by external hosts.

STOP—Stops reading inputs, forces non-retentive digital and analog outputs to 0, and halts the control program. (Retentive outputs retain the value they had before the keyswitch was turned to Stop.) The Stop setting can be used for installation and service of process-related equipment, *but is not required for service of the Tricon controller.*

REMOTE—Allows writes to program variables by TriStation 1131 application and external hosts. (Download All and Download Changes by the TriStation 1131 software are not allowed.) Modification of program logic is not allowed.

Voltage	Description	Type	Model No.	Points	For Details, See
0–5 VDC	Single-Ended	TMR	3720	64	page 49
0 to 5 or –5 to +5 VDC	Differential, DC Coupled	TMR	3721	32	page 49
Analog Output Modules					
4–20 mA	Current Loop, DC Coupled	TMR	3805E/3805H	8	page 50
4–20 mA and 20–320 mA	Current Loop, DC Coupled	TMR	3806E	6 and 2	page 50
–60 to 60 mA	Bipolar, Commoned Return, DC Coupled	TMR	3807	4	page 50

Tricon Equipment Certified for Use in Marine Environments

Bureau Veritas (BV) has certified specific Tricon products as being in full compliance with the following internationally recognized standard and qualified for use in marine environments:

BV NR467:2011, Part C, Ch 2-3 Rules for the Classification of Steel Ships; Part C - Machinery, Electricity, Automation and Fire Protection; Chapters 2-3

Bureau Veritas Environmental Category, EC Code: 31C

The following table lists the model numbers of Tricon equipment certified for use in marine environments and identifies the standard model to see for information about the equipment. All of the information (specifications, simplified schematics, installation guidelines, and so on) for standard equipment also applies to marine equipment. Additionally, refer to the *Planning and Installation Guide for Tricon v9–v10 Systems* for application-specific installation instructions.

Model Number	Description	See This Standard Model
Modules and Chassis^a		
8110C	Main Chassis	8110
8111C	Expansion Chassis	8111
8112C	Remote Expansion Chassis	8112
8310C	High-Density Power Module, 120 V	8310
8311C	High-Density Power Module, 24 VDC	8311
8312C	High-Density Power Module, 230 VAC	8312
3008C	Enhanced Main Processor III, 16 Mb	3008
4200C	Remote Extender Module	4200
4200-3C	Remote Extender Module (Set)	4200-3
4201C	Remote Extender Module	4201
4201-3C	Remote Extender Module (Set)	4201-3
4351BC	Tricon Communication Module (TCM), copper	4351B
4352BC	Tricon Communication Module (TCM), fiber-optic	4352B
4353C	Tricon Communication Module (TCM), Embedded OPC Server, copper	4353
4354C	Tricon Communication Module (TCM), Embedded OPC Server, fiber-optic	4354
3703EC	AI, 0–5 VDC or 0–10 VDC, differential, isolated, TMR, 16 pts.	3703E
3721C	AI, 0–5 VDC or –5 to +5 VDC, differential, DC-coupled, TMR, 32 pts.	3721
3700AC	AI, 0–5 VDC, non-commoned, differential, DC-coupled, TMR, 32 pts.	3700A
3720C	AI, 0–5 VDC, single-ended, 64 pts.	3720